

REMARKS

The Examiner is thanked for the thorough examination of the present application, and the indication that claims 2-6 and 8-13 contain allowable subject matter. The Office Action, however, tentatively rejected claims 1 and 7.

Independent claims 1 and 7 have been amended to more clearly identify a novel and non-obvious aspect of the invention. Claims 14 and 15 have been added to further define and/or clarify the scope of certain embodiments described in the specification. Support for these amendments can be found in the specification of the invention. Accordingly, no new matter has been added to the application by these amendments.

Response To Claim Rejections Under 35 U.S.C. §103

Claims 1 and 7 stand rejected under 35 U.S.C. §103 as allegedly unpatentable over Mastueda (U.S. Patent No. 6,873,312) in view of Maekawa (U.S. Patent No. 6,256,024). Applicants respectfully disagree for at least the following reasons.

In order for a claim to be properly rejected under 35 U.S.C. §103, the teachings of the prior art reference must suggest all features of the claimed invention to one of ordinary skill in the art. *See, e.g., In re Dow Chemical*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988); *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981).

Independent claim 1 recites the following:

1. A digital data driver, comprising:
a plurality of data lines, each transferring first data during a first period and second data during a second period;
a first shift register outputting a first enable signal during the first period;
a second shift register outputting a second enable signal during the second period;
and

a plurality of transmission controllers coupled to the plurality of data lines respectively, each having first to fourth latches connected in series and a first inverter;

wherein each transmission controller stores the first data and the second data in the second latch and the first latch respectively according to the first enable signal and the second enable signal; each transmission controller outputs the first data stored in the second latch to the fourth latch and outputs to a first DAC according to a third enable signal; each transmission controller outputs the second data stored in the first latch to the third latch and outputs to a second DAC through the first inverter according to a fourth enable signal.

(*Emphasis added.*) Independent claim 1 is allowable for at least the reason that Mastueda and Maekawa do not disclose, teach, or suggest the features that are highlighted in claim 1 above. As Mastueda and Maekawa do not disclose all limitations, and the rejection should be withdrawn.

More specifically, Mastueda teaches the two latches 12 and 13 connected in series in one column rather than four latches connected in series, as specifically recited in claim 1 (and illustrated in Fig. 1). Hence, Mastueda does not teach or disclose the claimed latches in claim 1. Instead, in Maekawa, the latches 16-1~16-n are not connected in series. Hence, Maekawa does not teach or reasonably suggest these features/limitations either. Consequently, the combination of Mastueda in view of Maekawa does not render claim 1 obvious, and the rejection should be withdrawn.

“The PTO has the burden under section 103 to establish a prima facie case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988). “Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined only if there is some suggestion or incentive to do so.” *ACS Hospital Systems, Inc., v. Montefiore Hospital*, 732 F.2d 1572, 1577,

221 USPQ 929, 933 (Fed. Cir. 1984). “There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination.” *In re Oetiker*, 977 F.2d 1443, 1447, 24 USPQ 2d 1443 (Fed. Cir. 1992).

The Office Action alleged that it would have been obvious to modify Mastueda by incorporating the teachings of Mackawa, such that data output from a latch 16 through an inverter 36 and input to a DAC can be obtained by replacing the 3rd latch of Matsueda with the latch of Mackawa because the inverter being part of the latch 16 enables the circuit to output rapidly amplified signal having a signal level required to process subsequent circuit.

However, as cited on lines 57-63 of col. 4 in Mackawa, “by providing *level shift circuits 15-1 to 15-n* between sampling switches 12-1 to 12-n and latch circuits 16-1 to 16-n, the sampled digital signal having a small amplitude is amplified rapidly to a digital signal of 0V to the power source voltage namely a digital signal having a signal level required to process in latch circuits 16-1 to 16-n and subsequent circuits.” Thus, enabling the circuit to output rapidly amplified signal having a signal level required to process subsequent circuit is obtained by *the level shift circuits rather than the latches* asserted by the Examiner. Hence, there is no motivation to combine Mastueda and Mackawa to obtain data output from a latch 16 through an inverter 36 and input to a DAC can be obtained by replacing the 3rd latch of Matsueda with the latch of Mackawa in the claimed invention.

Claim 1 patently defines over the cited art for at least these reasons, and Applicant respectfully requests that the rejection with reconsidered and withdrawn.

Independent claim 7 recites:

7. A liquid crystal display, comprising:
a plurality of pixels arranged in a matrix;

a scan driver turning on each row of pixels arranged in the matrix sequentially;
 and
 a digital data driver outputting data to the corresponding pixels, each comprising:
 a plurality of data lines, each transferring first data during a first period
 and second data during a second period;
 a first shift register outputting a first enable signal during the first period;
 a second shift register outputting a second enable signal during the second
 period; and
*a plurality of transmission controllers coupled to the plurality of data
 lines respectively, each having first to fourth latches connected
 in series and a first inverter; wherein each transmission
 controller stores the first data and the second data in the second
 latch and the first latch respectively according to the first enable
 signal and the second enable signal; each transmission
 controller outputs the first data stored in the second latch to the
 fourth latch and outputs to a first DAC according to a third
 enable signal; each transmission controller outputs the second
 data stored in the first latch to the third latch and outputs to a
 second DAC through the first inverter according to a fourth
 enable signal.*

(*Emphasis added.*) Independent claim 7 is allowable for at least the reason that Mastueda and Maekawa do not disclose, teach, or suggest the features that are highlighted in claim 7 above. As Mastueda and Maekawa do not disclose all limitations, and the rejection should be withdrawn.

More specifically, Mastueda teaches the two latches 12 and 13 connected in series in one column rather than fourth latches connected in series, as expressly recited in claims 7 (and illustrated in Fig. 1). Hence, Mastueda does not teach or disclose the claimed latches in claim 7. In Maekawa, the latches 16-1~16-n are not connected in series. Hence, Maekawa does not teach or reasonably suggest these features/limitations either. Consequently, the combination of Mastueda in view of Maekawa does not render claim 1 obvious, and the rejection should be withdrawn.

For at least these reasons, claim 7 patently defines over the cited art.

New Claims

Claims 14 and 15 have been newly added to further define and/or clarify the scope of the invention. New claims 14 and 15 are allowable over the prior art of record for at least the reasons that these dependent claims contain all features/elements/steps of their respective independent claims 1 and 7 respectively.


CONCLUSION

In light of the foregoing amendments and for at least the reasons set forth above, Applicant respectfully submits that all objections and/or rejections have been traversed, rendered moot, and/or accommodated, and that the now pending claims 1-15 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested.

If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this submission. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

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